

Appl. No. : 10/501,691
Filed : July 16, 2004

REMARKS

Claim 2 has been cancelled. Claims 1, 3 and 6 have been amended. Claims 1 and 4-7 are now pending in this application. Support for the amendments is found in the existing claims and the specification as discussed below. Accordingly, the amendments do not constitute the addition of new matter. Applicant respectfully requests the entry of the amendments and reconsideration of the application in view of the amendments and the following remarks.

Information Disclosure Statement

M.P.E.P. 609.04(a) II states that “[i]f no translation is submitted, the examiner will consider the information in view of the concise explanation and insofar as it is understood on its face, e.g., drawings, chemical formulas, **English language abstracts**, in the same manner that non-English language information in Office search files is considered by examiners in conducting searches” (emphasis added).

Accordingly, Applicants respectfully request that the Examiner indicate on the Form 1449 that the references for which an English abstract has been submitted have been considered, as M.P.E.P. 609 indicates that the references should be considered by the Examiner to the extent that they are understood on their face, i.e., on the basis of the English abstract.

Rejection under 35 U.S.C. § 102(b) Jacobsen, et al. (US Patent No. 6,033,784)

Claims 1-3 and 5-6 are rejected under 35 U.S.C. § 102 (b) as being anticipated by Jacobsen, et al. (US Patent No. 6,033,784).

The present claims 1 and 6 have been amended to recite that the “carrier is not coated prior to spotting with the solution of the biomolecule”. Support for the amendment is found in the present specification at page 10, see the second full paragraph, especially last 3 lines of that paragraph.

In contrast to the presently claimed invention, the substrates of Jacobsen, et al. are surfaces which have been coated to optimize attachment and binding as indicated in the attached product descriptions (Attachments A and B). The Nunclon® Delta treated surface (col. 11, line 24) is treated to maximize cell attachment (Attachment A). The Polysorp surface (col. 11, line 25) is hydrophobic, specifically designed for binding biomolecules which are hydrophobic (Attachment B). Accordingly, these substrates are specifically excluded by Applicants’ present amendment.

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In view of Applicants' amendment and arguments in light of Attachments A and B, reconsideration and withdrawal of the above ground of rejection is respectfully requested.

Rejection under 35 U.S.C. § 102(b) Zimlich, et al. (US Patent No. 5,288,647)

Claims 1 and 5-7 are rejected under 35 U.S.C. § 102(b) as being anticipated by Zimlich, et al. (US Patent No. 5,288,647).

This ground of rejection is believed to be overcome by amendment of claims 1 and 6 to recite Applicants' preferred synthetic resins. The disclosure of Zimlich, et al is directed to the use of nylon or nitrocellulose membranes (see col. 6, lines 41-42). These membranes are flexible and differ from the preferred embodiments as now recited in claims 1 and 6. Support for the amendment is found in the specification at page 5, line 3 to page 6, line 23.

In view of Applicants' amendments, reconsideration and withdrawal of the above ground of rejection is respectfully requested.

Rejection under 35 U.S.C. § 103(a)

Claims 1, 4, and 6-7 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Jacobsen, et al. (US Patent No. 6,033,784) in view of Zimlich, et al. (US Patent No. 5,288,647).

The Office Action states that Jacobsen, et al. teach a method of immobilizing a biomolecule on a carrier by spotting the biomolecule on the carrier and irradiating using a UV lamp which contains a component having a wavelength of 280 nm. The carrier is a Nunc-Immuno® plate. Zimlich, et al. is cited for their disclosure of the irradiation dose.

In contrast to the cited references, Applicants invention is directed to the discovery that biomolecules can be effectively immobilized on an inexpensive resin-based carrier and without precoating the surface of the carrier. As discussed above in the response to the 102 rejection over Jacobsen, Jacobsen, et al. use carriers which are coated to provide a treated surface for cell attachment (Nunc-Immuno® Delta) or to provide a hydrophobic surface for binding of hydrophobic biomolecules (Polysorp coating) (see col. 11, lines 24-25 of Jacobsen and Attachments A & B). This differs from Applicants' claimed invention which is uncoated. One advantage of Applicants' claimed invention is that coating may be avoided.

Zimlich, et al does not address this deficiency. Zimlich, et al. is concerned primarily with providing instrumentation so that the UV dose may be precisely controlled. Zimlich, et al. provides only minimal detail on the actual binding of the polynucleotide to the carrier, which is a

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nylon or nitrocellulose membrane. As discussed above, nylon and/or nitrocellulose membranes are flexible, paper-like disks. They cannot be molded into any desired shape as discussed in the present specification at page 10, second full paragraph.

In order to clearly distinguish their invention from Jacobsen, et al. and Zimlich, et al., claims 1 and 6 have been amended to recite preferred synthetic resins for the carrier and that "the carrier is not coated prior to spotting with the solution of the biomolecule".

Neither Jacobsen, et al. nor Zimlich, et al. teach or suggest the presently claimed invention. Jacobsen, et al. rely upon coated surfaces to enhance attachment. Zimlich, et al. is concerned with a UV delivery device and does not address the problem of providing attachment of biomolecules to inexpensive resins, simply and without the need for precoating. Accordingly, the cited references, taken separately or together, do not teach all of the limitations of the presently claimed invention.

Furthermore, Applicants have found unexpectedly that use of a wavelength of 280 nm, as claimed, provides superior immobilization of DNA as shown in the attached Declaration of Naoki Kimura (Kimura Declaration). Labeled oligonucleotides were synthesized and printed onto carbodiimide coated glass slides. The oligonucleotides were immobilized onto the carrier using wavelengths of 227, 254, 280, 307, and 334 +/- 15 nm (section 6 of Kimura Declaration). It was found unexpectedly that the signal intensity was 2-7 fold greater when using a wavelength of 280 nm +/-15 nm (section 7 of Kimura Declaration).

Jacobsen, et al. teach a broad range of irradiation frequencies (from UV to visible). Zimlich, et al. teach UV light, but Zimlich, et al. teach precise control of total UV dose (see Abstract) and are silent on the importance of the frequency. Neither reference teaches the unexpected advantage in using light of 280 nm.

In view of Applicants' amendments and arguments, Attachments A and B and the Kimura Declaration, which demonstrates the unexpected advantage of one feature of the invention, reconsideration and withdrawal of the above ground of rejection is respectfully requested.

Provisional nonstatutory obviousness-type double patenting rejection

Claims 1-7 are provisionally rejected on the grounds of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-7 of copending Application No. 10/535,582 in view of Grow (US Patent No. 5,866,430).

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This ground of rejection is addressed by submission of a terminal disclaimer herewith.
Withdrawal of the rejection is respectfully requested.

CONCLUSION

In view of Applicants' amendments to the claims and the foregoing Remarks, it is respectfully submitted that the present application is in condition for allowance. Should the Examiner have any remaining concerns which might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersigned at the telephone number appearing below.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

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By: Che S. Chereskin
Che Swyden Chereskin, Ph.D.
Registration No. 41,466
Attorney of Record
Customer No. 20,995
(949) 721-6385

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